DEADLY INVESTMENTS

A call for moratorium on polluting industries in Gujarat

GREENPEACE

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Greenpeace

PO box 3166, Lodhi Road, New Delhi-110 003
Telefax : 011-4310651
E-mail : info@greenpeaceindia.org

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Community Health Cell
Library and Documentation Unit
367, "Srinivasa Nilaya"
Jakkasandra 1st Main,
1st Block, Koramangala,
BANGALORE-560 034.
Phone : 5531518

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CALL FOR A MORATORIUM ON POLLUTING INDUSTRIES AND INFRASTRUCTURE THAT WILL PROMOTE POLLUTING INDUSTRIES IN GUJARAT

Unplanned industrial growth is leading India to the brink of an ecological disaster. Industrial estates, especially chemical industries around the country, in Gujarat, Maharashtra, Tamilnadu and Andhra Pradesh, are playing havoc with the health and environment of unsuspecting communities. But nowhere else is the problem so visible as it is in Gujarat – illegal dumpsites for toxic wastes dot the landscape; groundwater is visibly polluted; streams and rivers run foamy red and foul-smelling; children of migrant workers play and live amidst poisonous.waste.dumps.

Figure 1: An illegal waste dump on the outskirts of GIDC, Ankleshwar, Gujarat

Indian and overseas investors, international trade, aid and technical agencies such as ADB, World Bank, USAID, GTZ are clearly responsible for the environmental disaster that Gujarat is today. By investing in polluting industries and/or infrastructure that will directly or indirectly promote the expansion of polluting industries, these agencies have contributed to the problems associated with industrial pollution in Gujarat. It is time that these agencies stop the destruction of the natural and shared resources of the State, and instead repair the damage already done and invest in a cleaner Gujarat where the primacy of farmers and fisherfolk is acknowledged.

The Gujarat state, which has a history of unconditionally welcoming highly polluting chemical industries, recently launched an ambitious but shortsighted campaign to attract more than Rs. 56,000 crores (more than $12 billion) of investment in the chemical sector. The state aims to attract further investment from the World Bank and Asian Development Bank for the development of infrastructure including super highways, ports and power projects. Simultaneously, in its efforts to woo manufacturing industries, the Gujarat Government plans to ease restrictions on conversion of agricultural land for industrial uses.

STATUS OF MANUFACTURING INDUSTRIES IN GUJARAT

- 65 % of large and medium-scale industries are potentially polluting.
- 33 % of large and medium-scale industries are in the chemicals, drugs and pharmaceuticals sectors.
- Chemical industrialisation is concentrated in the "Golden Corridor" between Ahmedabad and Vapi
- About 60 % of the small-scale industries (SSI) lie within the "Golden Corridor."

EXISTING EVIDENCE OF INDUSTRIAL POLLUTION AND ITS IMPACTS

Figure 2: Water from an open well at Sabranpur, 3kms from Ankleshwar Industrial estate

According to a study that is being done for the World Bank, the groundwater in at least 74 of 184 talukas (sub-districts) in Gujarat is poisoned because of industrial pollution. Villagers in Haria, Umarsadi, Sarigam, Kolak, Ankleshwar and Sarangpur complain that the poisoned groundwater is causing health problems and falling agricultural yields.

Rivers such as Sabarmati, Mini, Par, Damanganga, Kolak, Tapi and Narmada are today critically polluted. These rivers are the lifeline for millions of fisherfolk and farmers who live along its shores. People living in and around the GIDC estates in South Gujarat are exposed to poisons through every medium: their water is poisoned; their air is polluted; the food from their fields and fish from the rivers and seas of Gujarat are contaminated.

End-of-pipe pollution management interventions such as Common Effluent Treatment Plants and incinerators are not only ineffective, but actually concentrate pollution load. [Greenpeace, December 1999 report] CETPs in particular, have led to the devastation of entire aquatic ecosystems.

Greenpeace undertook scientific investigations in the industrial corridors of South Gujarat in 1996 and 1999. These confirm the presence of dangerous levels of industrial poisons in the environment. The levels and types of pollutants found indicate that the State has neither the infratructure nor the political will to prevent pollution or punish offenders. Greenpeace also found chlorinated poisons, including hexachlorobenzene and polychlorinated biphenyls, both of which are slotted for global action, and possibly phaseout, under the UNEP's upcoming convention on Persistent Organic Pollutants.

Emerging evidence also indicates that the poisons put out by industries may already be entering the food chain of consumers through vegetables and seafood. Already reports and emerging evidence indicate that infertility is on the rise; young women suffer frequent miscarriages; respiratory and skin disorders are commonplace; and even fatal diseases such as cancer appear to be increasing.

In Kolak village, which is sandwiched between the Damanganga and Kolak rivers, both of which are polluted by the industries in Vapi, villagers report that the number of cases of cancer are abnormally high. In 10 years, villagers have documented at least 70 cases of cancer. Many others go unreported because of the social stigma associated with cancer.

Fisherfolk from villages along the industrial corridor complain of a sharp decline in fish catch and frequent fish kills due to the pollution from nearby industries.

Greenpeace documented families of semi-migrant cattle herders living amidst illegal hazardous waste dumps with their milch cattle. The kinds of poisons found in these areas include life-threatening and persistent pollutants that enter living organisms mainly through food sources and cause long term debilitating health damage.

GUJARAT'S INDUSTRIAL DEVELOPMENT PLANS

- More than $26 billion worth of investment in new industries
- More than $12 billion in the chemical sector
- Capital investment subsidies to small-scale sector, sales tax incentives.
- Incentives for setting up of industries in backward areas
- Infrastructure development via investments in new mega projects such as ports and super highways to improve the connectivity of the industrial area to the other parts of the state.
- Simplification of the process to convert agricultural land for industrial development.
- Promotion of minerals exploitation in the relatively backward areas of Kutch and Saurashtra.
- Infrastructure development to catalyse port-based industrial development.

ENVIRONMENTAL RAMIFICATIONS OF NEW INDUSTRIAL POLICY

Setting up of Common Effluent Treatment Plants, Common Effluent Disposal Channels, and hazardous waste disposal sites are about all that is discussed as measures for environmental protection. All three options are end-of-pipe interventions of questionable efficacy. CETPs are a known failure. Common Effluent Disposal channels merely transport the pollution and the damage to a distant location.

Some of the backward areas identified for industrialization are already sandwiched between heavily industrialized areas. Others are located near or around protected areas.

Infrastructure development, easier conversion of agricultural lands for industrial development will not only have an immediate impact on land and water equity, but also mean increased industrial activity that will generate its own pollution to address which there are no measures identified.

Increased mining activities within highly sensitive protected areas are blatantly identified as a policy for development.

Even as a large portion of the state is fast becoming an industrial wasteland, the Government has drawn up plans to wipe out the only remaining wilderness and resource-rich areas with more of their past industrial mistakes.

CONCLUSIONS

Seen in the context of Gujarat's horrendous track record of containing the pollution caused by its industries, the combined load of the new investments could destroy the infrastructure of survival – air, water and land – in the state. Add to this the fact that any public resistance to the poisoning of their lands and water by industries is usually met with violent repression by the State.

There is a desperate need for revisiting Gujarat's penchant for progress through industrialization. It is imperative that the Gujarat Government places a moratorium on investment in polluting industries until it has put in place a viable and transparent infrastructure for preventing pollution, punishing offenders and compensating victims.

DEMANDS TO GUJARAT GOVERNMENT

Greenpeace demands that the Gujarat Government take immediate action and implement the following:

a) a moratorium on polluting industries and industrial investment until the infrastructure is in place for preventing pollution, punishing offenders and compensating victims;

b) citizens' right to know about the nature of pollution caused by industries;

c) clean drinking water for all villages whose groundwater has been affected by industrial pollution;

d) clean-up of illegal industrial waste dumping sites;

e) compensation for villagers whose livelihoods and/or health have been affected by industrial pollution.

DEMANDS TO INVESTORS AND LENDING AGENCIES

Greenpeace demands that investors and multilateral and bilateral aid and trade agencies suspend all investments in polluting industries or infrastructure supporting polluting industries in Gujarat until the Gujarat Government proves that it has provided the technical and democratic infrastructure required to prevent pollution, punish offenders and compensate victims.

FOR MORE INFORMATION VISIT

WWW.GREENPEACEINDIA.ORG

COMMON EFFLUENT TREATMENT PLANTS DON'T WORK

AN EXPOSE OF THE LIMITATIONS OF COMMON INDUSTRIAL WASTEWATER TREATMENT PLANTS

Over the last decade, Government agencies, goaded by institutions such as the World Bank, have pushed Common Effluent Treatment Plants as the magic solution to the pollution caused by small-scale industries. Common sense, corroborated by scientific evidence, proves that CETPs are neither magical nor a solution. CETPs cannot destroy pollution. In fact, in all the areas where they are in operation, they serve to concentrate the pollution of several industries for discharge into the environment.

Despite the acknowledged limitations of the technology, Governments are promoting CETPs as a solution solely to rein in public protest against the growing pollution of land and waters by dirty industries. The following questions and answers expose why CETPs do not work. They also make an argument for stopping all further investments in this ineffective technology and focus instead on real solutions that take us on the path to clean production.

1. What are Common Effluent Treatment Plants (CETP)?

CETPs claim to be able to treat the combined effluents from several industries. Polluted wastewater from the industries are usually sent to the CETP via pipelines, open channels or by tanker trucks. After passing through a series of processes, such as filtration, settlement, aeration and microbial and chemical treatment ponds, the wastewater from the plant is considered ready for discharge into the environment.

2. What can CETPs do?

If provided with effluents from industries using similar processes and chemicals, CETPs can effectively fix simple parameters such as Total dissolved solids, Total Suspended Solids, BOD, COD and pH so that the discharge standards for these parameters are met.

3. Can CETPs put out clean uncontaminated water?

No. Even if the standards for the above parameters are met, it does not mean that the effluent from CETPs would be safe or healthy. Industrial effluents are dangerous to the environment because of the presence of life-threatening persistent organic poisons, volatile organics, and heavy metals such as lead, cadmium, arsenic, chromium and mercury. CETPs neither address these poisons, nor are they currently required to monitor for or clean any of these pollutants.

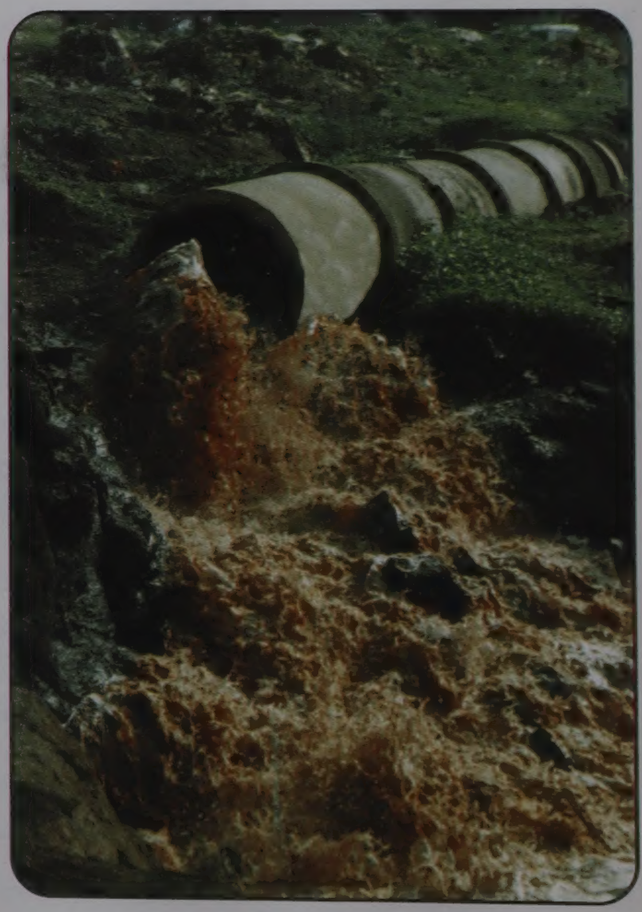


Figure 3: Effluents from the Vapi CETP being released in the Damanganga river

Effluent treatment plants cannot get rid of many of the persistent organic poisons. They cannot destroy the heavy metals. They do not even address the volatile organic compounds.

4. Why are CETPs not a solution?

Even in theory, CETPs are not a suitable option for the treatment for industrial wastewater from a complex variety of industries. Effluents from different industries tend to carry different poisons at different levels. Not only that, industrial wastewaters are often a complex cocktail of poisons each of which would require different methods for removal or destruction. This problem is further complicated by the fact that for a CETP to function optimally, the influent flow needs to be controlled and steady and the effluent characteristics needs to be as consistent as possible. In real life, this does not happen.

Rather than get rid of the pollution, CETPs merely redistribute the poisons from the liquid to solid sludge phase. This may reduce the immediate contamination of surface waters, but creates an additional contaminated waste stream – of poisonous sludge – that must be disposed of.

By focusing attention on liquid wastes, CETPs tend to hide the fact that they not only generate vast amounts of highly contaminated sludge, but also contribute significantly to air pollution by pollutants that volatilise into the environment.

In 1999, Greenpeace analysed the quality of treated wastewater discharges from various CETPs in Gujarat. The CETP at Vapi GIDC, for instance, discharged treated effluents that contained several chlorine-containing organic compounds. Some such as hexachlorobenzene and polychlorinated biphenyls are highly poisonous. The treated wastewater also contained high levels of cadmium, and detectable levels of chromium, copper, lead, manganese, mercury, nickel and zinc. It is also probable that, were it to be sampled, the sludge at the bottom of the settling tank in the CETP would be very heavily contaminated, as many of the metals will simply settle from the liquid to the sludge.

5. What is the way out of the impending toxic crisis?

The present toxic crisis is the result of decades of shortsighted planning. End-of-pipe treatment technologies such as Common Effluent Treatment Plants and incinerators are the most dangerous manifestation of the fact that developers and Governments are still reluctant to address the real problem of pollution and continue to sacrifice the viability of life-supporting ecosystems for the sake of industrial economic viability.

The key to any successful long-term strategy to move us away from the impending toxic crisis is Clean Production, which begins with the collection and publication of detailed information regarding the nature and quantities of toxic chemicals used or released by individual industries. Such information could form the basis of waste reduction strategies that need to be integral to any waste management program. Particularly troublesome waste streams need to be traced back to their origins and means to eliminate them need to begin at the factory level either by substituting the poisonous chemical with a less toxic one or by changing the process to one which deals with less problematic chemicals.

This involves detailed chemical characterization of all the waste streams produced, leading to a re-evaluation of the raw materials and processes employed, in order to identify mechanisms for the reduction of the raw materials and processes employed. Ultimately, it may be necessary to reformulate products in order to meet the long-term goal of elimination of priority pollutants at source.

To :
The Chief Executive Officer
Vapi Common Effluent Treatment Plant
Vapi, Distt. Valsad
Gujarat

19 October, 2000

Dear Sir,

Despite efforts made by Greenpeace to alert your company, the Pollution Control Board and the District Magistrate to the toxic pollutants present in treated effluent discharged from the Vapi Common Effluent Treatment Plant, no efforts have been made to resolve these serious environmental concerns. Please be informed that Greenpeace has gathered at the CETP today with local communities affected by the pollution to peacefully protest the ongoing environmental damage to the region.

Greenpeace intends to engage in non-violent direct action to prevent further pollution and environmental degradation. We urge you to accept responsibility for the harm caused by your plant and to work with Greenpeace to find solutions to prevent further pollution.

In 1999, Greenpeace conducted a comprehensive analysis of the "treated" wastewater discharged by the Vapi Common Effluent Treatment Plant. The results and interpretation of the same are contained in the report enclosed. In sum, the scientific analyses confirmed what the villagers living downstream of the CETP outfall in Damanganga have been complaining about for four years - that the CETP was the most prominent source of pollution in the Damanganga.

The report confirmed the presence of several toxic chemicals, listed below. Many more compounds were isolated, although they couldn't be reliably identified.

Organohalogen Compounds
Chlorobenzenes, Hexachlorobenzene, Chlorinated Benzeneamines, Chlorinated Pyridine derivatives.

Polycycle Aromatic Hydrocarbons
Naphthalene and its derivatives.

Other Aromatics
Diphenyl Ether

Metals
Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel and Zinc.

The treated wastewater discharged from the CETP was found to contain high levels of cadmium, and detectable levels of chromium, copper, lead, manganese, mercury, nickel and zinc. It also possible that were it to be sampled, the sludge at the bottom of the setting tank world be very heavily contaminated, as many of the metals will simply partition out of the water phase and into the sludges.

Additional samples were collected of treated wastewater and sediment from beneath the CETP outfall in October 2000. The results are attached (See columns titled E1 (effluent) and S1 (sediment).

As is clear from the new analyses, the wastewater from the CETP continues to violate even the most basic parameters of COD, colour and dissolved oxygen. The latter (DO) was Nil. More disturbingly, the wastewater had detectable levels of Chromium and Copper.

The sediment had elevated levels of toxic metals, including Cadmium, Chromium, Copper, Lead and Mercury.

From the analyses, and the complaints of fisherfolk who live further downstream about declining fish stock and fish of compromised quality, it is clear that the CETP is a significant source of pollution of the River Damanganga.

The CETP is clearly incapable of dealing with heavy metals, volatile compounds and many of the most dangerous organohalogen compounds. The metals detected in the wastewater and the sediment are toxic and have a very direct impact on the health of the river and the fish.

Currently, only the very basic parameters are monitored. While these are important indicators, adherence to these parameters do not guarantee safe wastewater. In this case, even the basic parameters are violated.

CETPs are clearly out of their depth in dealing with the complexity of industrial pollution in the Vapi GIDC. The continued discharge of the combined pollution by 600 industries by the Vapi CETP does not bode well for the environment or the people dependent on it. In fact, we feel CETPs are a barrier to Clean Production.

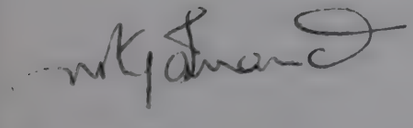
Our demands to you are very clear and doable:

1. Acknowledge that CETPs do not deal with metals, volatile compounds and persistent organic compounds, including organochlorines.

2. Agree to publish the results of wastewater and sludge analyses for an extended list of parameters listed below.

Using your information, we'd be able to work on plans to identify the sources of the priority pollutants and put in place a system that will reduce, with the aim of elimination, the discharge into the environment of these chemicals. At least as importantly, we see the assertion of the public's right to know as fundamental to the ability to maintain a clean and healthy environment.

Sincerely,



Nityanand Jayaraman

Greenpeace

PO Box 3166, Lodi Road,

New Delhi 110 003

Telfax : 011 4310651

Cc : The District Magistrate, Valsad, Gujarat

Devjibhai Tandel
Ex-MP Daman

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(D.A. DOLTA)
Rly office
GPCB.

Rohitbhai Prajapati
Paryavaran Suraksha Samiti

Ganpatbhai Tandel, G.B. Tandel
Kolak. President, Machiman Mahajan

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ENCL: Toxic Hotspots: A Greenpeace Investigation of Gujarat Industrial Estates

The World Bank
Washington, D.C. 20433
U.S.A.

RICHARD ACKERMANN
Sector Director, Environment
South Asia Region

November 1, 2000

Mr. Remi Parmentier
Political Director
Greenpeace International

Dear Mr. Parmentier:

In follow-up to your recent exchange of letters with Mr. Wolfensohn, I would like to provide additional details on our thinking about Common Effluent Treatment Plants (CETPs). In particular, I'd like to note that we agree with you on the dangers of CETPs.

In fact, your assessment mirrors a similar assessment we made three years ago. At that time, we took immediate action to redirect our efforts and press the relevant authorities to rectify the mistakes of the past - with slow but certain success. The first and drastic step we took was to drop a proposed additional project for almost $200 million that had been sought by the Government of India and various state governments, in favor of an approach that put clear compliance responsibility on the private sector and regulatory responsibility on the public sector. The big challenge, as we now see it, is to find practical and effective ways to strengthen the partnership of communities, regulators, and the private sector to enforce improved environmental planning and compliance - and to mitigate and avoid the kinds of pollution disasters to which you allude.

I am taking the liberty of attaching two documents. The first one, for your information, summarizes the evolution of our thinking about CETPs over the past 2-3 years in India. The second one, for your information and comment, is a draft Policy Note which has been shared with the Government of India.

My colleagues and I would value a meeting with you and any of your representatives to discuss these matters in more detail. I will try to call you to discuss. If appropriate, we could arrange meetings in India at the appropriate time. As we have given considerable thought to these matters, we would be interested to share experiences and learn more from you how progress could best be achieved, and who is best placed to bring it about.

Sincerely,

Richard Ackermann

Mailing Address : 1818 H Street, NW; Washington, DC 20433; USA
Telephone : +1 (202) 473-2606, Fax : +1 (202)522-1664, Internet : rackermann@worldbank.org

CENTRAL EFFLUENT TREATMENT PLANTS (CETPS) AND THE WORLD BANK IN INDIA [BACKGROUND NOTE]

CETPS IN INDIA

The CETP concept was originally promoted by the Indian Ministry of Environment and Forests (MoEF) in 1984 to treat waste waters from a large number of small- and medium-scale industries. This concept was conceived as a way of achieving end-of-pipe treatment of combined industrial waste waters by full-time professionally trained specialists at lower unit costs than could be achieved by individual industries, and to facilitate discharge monitoring and enforcement by environmental regulatory authorities. The first CETP in India was constructed in 1985 in Jeedimetlha near Hyderabad, Andhra Pradesh, to treat waste waters from pharmaceuticals and chemicals industries - long before the World Bank became active in this sector. This CETP was followed by others in Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra, and Tamil Nadu. As of June 1994, in the State of Gujarat, one CETP - which had been constructed by the Gujarat Industrial Development Corporation (GIDC) in Nandesari - could not be commissioned for several years because the member industries had failed to provide the necessary primary treatment. At that time, construction work at the CETPs in Ankleshwar, Sachin, Sarigam, Panoli, and Vapi (the subject of Greenpeace's protest) had not even been initiated.

Extensive public interest litigation and numerous verdicts by the Indian courts provided a major impetus to construct CETPs at an accelerated pace, and the World Bank was asked to provide assistance toward this process in the early 1990s, at a time when this appeared to be a viable solution to the problem. Most of the court verdicts were given in the State of Tamil Nadu, followed by New Delhi, and the State of Gujarat.

CHANGES IN WORLD BANK THINKING ON CETPS

By the mid-1990s, the Bank's Environment Department was already starting to recognize the possible drawbacks of CETPs and the traditional approach to pollution control (as opposed to pollution prevention and cleaner production). In the process of preparing our Pollution Prevention and Abatement Handbook, we held discussions with Greenpeace, and consulted Greenpeace's excellent "Inventory of Toxic Technologies" published in May 1994. The thinking contained in our Handbook gradually found its way into operational practice.

At the same time, we started an arduous process of working with our counterparts to restructure and cancel parts of the existing projects, and to work with the Government of India on a CETP Policy Note, a draft of which is given as Attachment 2. At the end of last year, we also closed the Industrial Pollution Control Project which had been approved in 1991, and prepared a detailed analysis of the outcome of that project. The report is quite critical of the approach pursued as well as of the Bank's handling of the issue. Copies of the Implementation Completion Report, which was endorsed by the Bank's independent Operations Evaluation Department, can be obtained directly from the Government of India.

Unfortunately, not all state agencies and court justices in India, not to mention many colleagues in bilateral and multilateral funding institutions, share the view that CETPs are not an appropriate pollution control strategy. One reason is the continued erroneous belief that public subsidies for pollution abatement can make up for weak regulatory capacity. Interestingly, larger companies in the private sector — who do not expect subsidies — may be the first to recognize the benefits of cleaner production and to adopt alternative measures because it is in their own interest. In detailed discussions

with some companies, we feel we have already made significant advances in persuading them to improve their environmental performance on the basis of intrinsic process modifications and above all better industrial management.

LESSONS LEARNED FROMTHE CETP PROJECTS

As of January 1998, there were 77 CETPs in India approved by MoEF. Of these, 15 had been completed (though many were not functioning properly), and 62 were in various phases of construction. At that time, we commissioned an internal review to review the performance of the Industrial Pollution Control and Industrial Pollution Prevention Projects. This review highlighted the procedural delays in subproject approvals, problems with ownership structures of CETPs (especially in Gujarat, with GIDC taking the lead to form CETP companies jointly with the industries in the estate), cost overruns, management of the sludge from the CETPs, need for review of the subsidy policy, membership fees and charging systems at the CETPs, and management of risks. In particular, it is evident that enforcement of pretreatment requirements by CETP member industries is difficult, resulting in an effluent quality that is out of compliance with respect to several parameters established by the Gujarat Pollution Control Board (GPCB). Although discharge parameters have been established, GPCB lacks the necessary enforcement action because of the high cost of compliance. Most seriously of all, CETPs generally fail to address toxic effluents, which must be addressed as an intrinsic part of industrial production or, at a minimum, as part of pretreatment of wastes flowing to CETPs.

A NEW APPROACH FOR CETPS

The first-generation CETP projects in Gujarat are basically centralized end-of-pipe (effluent) treatment plants for industrial dischargers. However, it is crucial that pollution prevention concepts should be applied to an integrated system consisting of: (i) wastewater generators discharging to a CETP, (ii) the CETP, and (iii) the receptors for the CETP discharges (wastewater discharges, sludge disposal, and air emissions). The CETP Policy Note (Attachment 2) takes this approach, and we have objected to the financing of all but two CETPs because we did not see any progress in dealing with the underlying issues. The two acceptable subprojects are implementing the steps outlined in the CETP Policy Note, as follows:

- The original cost recovery formulae for the CETPs - which were based only on the wastewater flow rate - have been revised in such a manner that member industries discharging less hydraulic and organic loads will benefit while those discharging higher hydraulic and organic loads will be required to pay additional charges. The new formulae will allow member industries to reduce hydraulic and organic pollutant loads in discharges to the CETPs, facilitate CETPs' operation, and improve CETPs' compliance with environmental requirements.

- Recycling/reusing of effluents from CETPs to member industries is being evaluated through pilot-scale testing and compared with the originally-conceived scheme of discharging to the surface water. If the studies show that the recycling/reuse option is feasible and more cost-effective than the originally conceived options, then hydraulic and pollutant loads in CETPs' effluents will be curtailed or eliminated.

- The legal agreement between the CETPs and their member industries have been revised to include pollutant discharge requirements relevant to the type of industries. In addition, GPCB has been alerted to the relevant pollutant parameters that should be monitored in the CETP discharges.

- Detailed environmental management plans (EMPs) have been prepared for the CETPs. The EMPs will standardize the environmental management activities of the CETP personnel and improve the compliance status of the CETPs and their member industries.

- Environmental awareness created through the Industrial Pollution Prevention Project has led a number of CETP member industries to implement pollution prevention measures and obtain positive results in reducing hydraulic and pollutant loads in their discharges. Some industries have formed waste minimization circles (WMC) and one industry is applying for ISO14001 certification. The Bank has been supporting the industry's efforts by providing industry-specific technical assistance on pollution prevention.
- Through Bank involvement, sludge disposal has become an integral part of the CETP projects. The original sludge disposal plans have been revised for disposal in secure landfills.

CETP POLICY NOTE
(WORLD BANK)

Central/Common Effluent Treatment Plants (CETPs) in India are currently viewed as "central end-of-pipe (effluent) treatment plants" for industrial dischargers. This practice can be made much more effective if the pollution prevention concept is applied to an integrated system consisting of the following three components: (i) wastewater generators discharging to a CETP, (ii) the CETP, and (iii) the receptors for the CETP discharges (wastewater discharge, sludge disposal, and air emissions). This Policy Note lists certain recommendations based on CETP-related experience in Bank-supported projects in India.

- **Benefits of pollution prevention at member industries to CETPs.** The benefits of pollution prevention at industries discharging to CETPs are not yet appreciated in India. Resource conservation with cost savings by the industry, CETP, and the CETP discharge receptors (e.g. landfill) can be achieved through implementation of pollution prevention measures by industrial generators. It is important that these measures be explored through pollution prevention audits at industrial dischargers prior to wastewater characterization and treatability work conducted for CETP designs. Then savings in capital as well as operation and maintenance (O&M) costs can be achieved. For example, if the inflow to a CETP can be reduced by 30 percent, then as much as 20 percent in capital and O&M costs can be saved by CETPs and associated landfills. Given the large number of CETPs financed in India (including the central and state government subsidies), the amount of potential savings would be considerable. However, for the already constructed CETPs, the benefits would be limited to the O&M costs for the CETPs and associated landfills. It is critical to create awareness for this concept in India. It is also important that environmental agencies (e.g. State Pollution Control Boards) require pollution prevention audits at industries that are wastewater dischargers to CETPs as part of the CETP permitting process. Industry can establish incentive schemes for their workers who contribute to identification of implementable pollution prevention measures at their facility. IDA funds under the Industrial Pollution Prevention Project can be used to conduct pollution prevention audits.

- **The fee structure of water** for industrial use or wastewater discharged by industries (i.e. water cess) can have a large incentive effect for industry to conserve water and reduce (or eliminate) discharge of pollutants. For example, at the Karur Vanchi (Tamil Nadu) CETP visited by a Bank team, because industrial water is free of charge, there is no incentive for water conservation and pollution prevention. As a result, high pollutant loads are accompanied with excessive water discharges. In Sachin (Gujarat), by contrast, industrial water is supplied at a cost of Rs. 11/m3 to Rs. 14/m3, and a significant percentage of industries discharging to the Sachin CETP already recycle water. In locations where groundwater with acceptable quality is accessible, high rates of water cess or groundwater extraction fees (along with an enforceable groundwater policy) can be used as mechanisms to discourage excessive discharge of water and pollutants from industries. The Bank strongly recommends that this policy option be used by State Governments to encourage industry to conserve water (especially in water scarce areas) and prevent pollution.

- **Benefits of recycling/reusing the CETP effluent.** The benefits of the CETP effluent being recycled to the member industries are not yet fully appreciated in India. Recycling of the CETP effluent for agricultural use might also be viable option. However, the time constraint for preparing a CETP project may be a deterrent to evaluate thoroughly, through long-term studies, the potential impacts of pollutants in the CETP effluent on the food chain. The strong interest for recycling/reuse by member industries is generally expressed from industries located in states where industrial water is not a free good (e.g. Gujarat). Construction of the treated water discharge pipe

from CETPs to the receptor (i.e. surface water body) by Industrial Development Corporations (IDCs) may also be a disincentive for the CETP/discharging industries as this may constitute a hurdle for the evaluation of alternatives for the CETP effluent (i.e. recycle to member industries with or without tertiary treatment at the CETP, reuse for agricultural use with or without tertiary treatment at the CETP, and direct discharge to a surface water body). The Bank strongly recommends that State Governments encourage CETPs to submit an evaluation of alternative options for the CETP effluent as part of the documentation for CETP approval. Furthermore, if the study recommends direct discharge of the effluent to a surface water body and if an IDC is involved in construction of the pipeline, the Bank further recommends that the IDC be fully compensated for the associated expenses by CETP. The IDA funds under the Industrial Pollution Prevention Project can be used to conduct evaluations of alternative options for the CETP effluent.

- **Characterization of the CETP sludge for hazardousness** is not conducted in India because the current Indian hazardous waste legislation lists categorically that "sludges from wastewater treatment (Waste Category 12)" are hazardous. The Bank recommends that this legislation for the CETP sludges be reviewed and possibly revised to consider potential savings associated with the requirements of handling, transporting, and disposing of hazardous versus non-hazardous wastes. Characterization of sludges from the primary and secondary treatment as well as the combined sludge from the CETP can be conducted through leachate testing. Results of these studies can form the basis of background studies for amending the legislation, if necessary.

- **Central and state government subsidies.** There is enough evidence that central and state government subsidies are not essential for CETPs represented by medium- and large-scale industries. In a revised estimate of sources of financing for a CETP recently visited by a Bank team, while the total central and state subsidies remained about the same, the reduction by more than half from the previously approved loan amount was compensated by doubling the capital equity. In addition, based on experience from the Industrial Pollution Control Project and the variation in the performance of CETPs in India, the Bank strongly believes that the element of central and state government subsidies be limited for CETPs that receive wastewaters only from small-scale industries and that are well-managed by professional teams, preferably by private professional firms independent of the CETP member industries. The Bank recommends that such subsidies be preferably in the form technical assistance (such as evaluation of alternatives, pollution prevention audits) rather than contribution to the investment cost of CETPs.

- **Sludge management as part of CETP projects.** The Bank team who recently visited several CETPs in India noted that sludge management has mostly come as an afterthought during the CETP projects. The Bank strongly recommends that State authorities insist that sludge management (including disposal) be an essential part of CETP projects, which should be addressed along with the CETP design.

- **Private sector-funded hazardous waste facilities.** There are examples of well designed, built, and managed hazardous waste facilities by the private sector in the State of Gujarat. Examples include those by the Nanderasi Environment Control Ltd. (Nanderasi), Enviro Technology Ltd. (Anklashwar) for the common hazardous waste facilities, and those by Gujarat Alkalies and Chemicals Ltd. (Baroda), India Petrochemicals Ltd. (Baroda), and Chemsynth (Surat) for single company-dedicated hazardous waste facilities. The Bank recommends that these good practice examples be emulated at other sites/states in India independent of national and state government funding.

- **CETP monitoring of industrial discharges.** The Bank views the CETP concept to be an excellent opportunity for the private sector (the CETP operators in this case) monitoring the quality of wastewater discharges from its member industries. This concept —which is equivalent to "industry self-monitoring"-reduces the monitoring effort required of the SPCBs. In particular, SPCBs could only monitor the discharge from the CETP, and not the

many discharges from individual industries that supply it. The Bank recommends that SPCBs be relieved of their responsibilities for monitoring industrial discharges to CETPs, and instead focus only on discharges to the environment. We also understand that there are practical difficulties for the CETP in enforcing its legal agreements with the member units. The Bank strongly suggests that this issue be investigated and a practical solution to this problem be implemented.

- Lack of industrial safety measures. At some of the CETPs recently visited by the Bank, a major lack of safety measures was observed. As avoidance of loss of human life should be a priority, the Bank strongly recommends that enforcement of safety measures be given serious attention by State authorities.

- Lack of industrial hygiene measures. During visits to typical member industries of CETPs in Tamil Nadu, a Bank Team observed workers with no personal protection equipment (no gloves, no shoes, no special work clothes) working in operations where they were in direct contact with bleaches, dyes, and hazardous chemicals. The plant representatives did not answer sensitive hygiene-related questions asked by the Bank Team. The Bank recommends that measures be taken -possibly as a condition for the approval of license to operate the CETP— to ensure adoption of appropriate industrial hygiene measures by member industries. Successful implementation of such measures requires good cooperation between the state environmental institutions (SPCBs) and industrial safety departments.

WORLD BANK SUPPORT FOR INDUSTRIAL POLLUTION CONTROL

Project : Industrial Pollution Control

Fiscal Year : 1991

Loan/Credit Amount : IBRD US$ 124.0 million / IDA US$31.6 million (equivalent)

Description : The project objective is to support the GOI's efforts to prevent and alleviate environmental degradation caused by industrial operations and assist in the successful attainment of the proposed short- and medium-term targets of its environmental policy.

THE PROPOSED PROJECT COMPRISESTHREE COMPONENTS:

(a) *An institutional component* designed to strengthen the Central and State Pollution Control Boards in the states of Maharashtra, Gujarat, Tamil Nadu and Uttar Pradesh. The component would finance a trainingprogram in technical and managerial skills; acquisition of equipment required to upgrade technical capabilities of the Boards; and other managerial skills.

(b) *An investment component* designed to finance: individual projects in target sectors dealing with waste minimization, resource recovery and pollution abatement; the set up of common treatment facilities at industrial estates, for the treatment and disposal of liquid and solid wastes; and selected demonstration projects based on their prototype nature or novelty of application in India.

(c) *A technical assistance component* designed to assist the Ministry of Environment and Forests to evaluate environmental problems and develop solutions; and the DFI's to assist enterprises in undertaking the required feasibility studies for pollution control investments.

Project : Industrial Pollution Prevention

Fiscal Year : 1994

Loan/Credit Amount : US$250.0 M (equivalent)

Description : The project objective is to assist in the implementation of the government's policy on pollution abatement and promote cost-effective pollution abatement from industrial sources. The project will focus on the most polluting industrial sectors and comprise three components:

(a) *An institutional component* designed to strengthen the State Pollution Control Boards in the states of Rajasthan, Madhya Paradesh, Karnataka and Andhra Pradesh. In addition, support to the boards in Gujarat, Maharashtra, Tamil Nadu, and Uttar Pradesh will continue to be provided, complementing the activities already sponsored under the Industrial Pollution Control Project.

(b) *An investment component* will support subprojects by individual firms for pollution abatement, with a focus on waste minimization, and adoption of cleaner methods of production. The line of credit for priority investments provided under the first project would be continued. Resources would also be renewed for financing common effluent treatment plants (CETPs) which would now include fundling for industrial water recycling plants (IWRPs) that use sewage as input.

(c) ***A technical assistance component*** to support:

(i) ***The establishement of a "clean technology institutional network"*** designed to promote the development, diffusion and transfer of technologies with environmental benefits for industry.

(ii) ***Extension services for the identification of waste minimization and abatement methods*** for small-scale industry, and the organization of waste minimization circles.

(iii) ***Preinvestment studies*** for CETPs, IWRPs, and other waste minimization facilities proposed to be financed under the project.

(iv) ***Finance for other training and consulting services*** under planning by the MOEF, including the training requirements for the preparation of environmental statements by industries.

[Source: India's Environment ;Taking stock of plans, programs and priorities;An assessment of the Environment action program- India (January 1996) Published by South Asia Regional Office,World Bank.]

TOXIC HOTSPOTS

(A Greenpeace Investigation of Gujarat Industrial Estates)

TOXIC POLLUTION IN GUJARAT

Following a sampling and analysis programme carried out in 1996, in May 1999, Greenpeace International carried out a further programme at industrial estates located at Ankleshwar, Nandesari and Vapi in Gujarat, India. These estates consist of an estimated 3,000, 300 and nearly 2,000 industrial units respectively. The industries utilise common effluent treatment plants have been promoted in the region as a long-term, end of pipe solution to the environmental problems arising from contaminated wastewater disposal.

The results of this investigation and previous work by Greenpeace clearly show that CETPs fail to deal with all the chemical pollutants produced by industry. By combining wastewaters from a large number of industrial units, often engaged in very different manufacturing processes, highly complex effluents and wastes, with wholly unpredictable toxicological properties, may be generated. At best, CETPs serve to concentrate persistent pollutants from liquid waste streams into highly contaminated sludges. Our results also demonstrate that not all he heavy metals and other persistent organic pollutants are removed from the effluent resulting in significant, direct, discharges to waterways outside the plant.

Existing Indian pollution control legislation does not demand detailed chemical characterisation of effluents. Therefore, many components of wastes are overlooked, including persistent organic compounds. Consequently wastewaters which are considered acceptable for discharge to surface water by the authorities can still contain high concentrations of toxic and persistent chemicals.

In short, far from solving a problem, the use of CETPs simply creates another hazardous waste stream.

Figure 4: Dinesh Bahi Ambali, a blind farmer from Sarigam in his paddy field destroyed by toxic pollutant, Dec 1999

HOTSPOT # 1:- ANKLESHWAR INDUSTRIAL ESTATE

The Ankleshwar industrial estate is made up of approximately 3,000 individual companies. Over half of these are chemical units, manufacturing dyes, paints, fertilisers, pharmaceuticals, industrial chemicals, pulp and paper and pesticides. The Ankleshwar Industrial Association has estimated that its members generate between 250-270 million litres a day of liquid waste, and approximately 50 thousand tonnes of solid waste annually. Of this, 585 arises from the manufacture of dyes and dyes intermediates, 19% from drugs and pharmaceuticals, and 5% from inorganic chemicals.

Many of the larger, more modern plants on the site do have their own wastewater treatment facilities (although the range of chemical parameters addressed is likely to remain limited). Many others send their waste to the common effluent treatment plant, but some are still discharged to the environment without any semblance of treatment. Significant results included:

Sludge from CETP (IT9048)

- Persistent organic pollutants including hexachlorobenzene, chlorinated benzenamines and several environmentally toxic polychlorinated biphenyl (PCB) isomers were identified.
- High levels of copper were found.

This sample contained high levels of copper, therefore illustrating that even if the CETPs are capable of removing heavy metals from the incoming waste stream, metals are still left in concentrated solid residues.

Untreated Effluent from discharge pipe (IT 9049)

- Persistent organic pollutants including hexachlorobenzenes chlorinated benzenamines and several isomers of PCB were identified.
- High levels of copper and significant levels of chromium

Amlakhadi Channel at Ambrole bridge (IT9051 & IT9052)

- The water sample collected here contained persistent organic pollutants including chlorinated benzenes, chlorinated benzenamines, brominated benzenamines and PCB isomers. The sediment also contained hexachlorobenzene, phenolic compounds, chlorinated benzenamines and several PCB isomers. Many of these compounds are persistent and toxic in the environment.
- The water sample contained extremely high levels of manganese and significant levels of copper, cadmium, chromium, nickel and zinc and the sediment contained elevated levels of chromium, mercury, copper and zinc.

Levels of these chromium, mercury, copper and zinc found naturally in unpolluted freshwater ecosystems are low. For example, river water levels of cadmium and chromium are usually less than 1 ug/l yet 20 ug/l of cadmium and 90 ug l of chromium were detected in the water sample from the Amlakhadi (IT9051). Similarly river water levels of copper, manganese, nickel and zinc usually range from 20-50 ug/l. Therefore, depending on the reference value used, copper levels in the Amlakhadi water sample (IT9051) exceeded background concentrations by approximately 12-30 times, manganese by 310-780 times, nickel by 5-13 times and zinc by 5-14 times.

Levels of mercury in uncontaminated sediments are extremely low, with usual concentrations ranging from 0.2-0.35 mg/kg. in the Amlakhadi sample (IT9052), levels approximately 10-18 times background concentrations were present. Background levels of copper, zinc and chromium are usually less than 100 mg/kg, and again these levels were exceeded.

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Key findings:

Samples from around the Ankleshwar industrial estate indicate contamination of this site by a wide range of organic compounds, the majority of which are toxic to both the environment and humans, and may persist for a long time.

It is clear that the operation of the CETP is not effective because the same organic compounds were found in both sediment sample from CETP lagoon (sample IT9048) and in sediment and water from Amlakhadi channel which supposedly receives treated wastes (samples IT9052 and It9051 respectively).

Toxic chemicals are also undoubtedly entering the Amlakhadi channel from the pipes carrying untreated wastewater. Some of the organic compounds found in the Amlakhadi channel samples may represent past contamination because they are persistent (for example, chlorinated benzenes). However, the presence of other halogenated compounds, such as chlorinated and brominated benzenamines, is a sign of current input, because these compounds are likely to break down more rapidly when released to the environment.

HOTSPOT # 2:- NANDESARI INDUSTRIAL ESTATE

The Nandesari industrial estate was established in 1969, and is now made up of approximately 300 industrial units, including those that produce a wide range of chemicals, pharmaceuticals, dyes, pesticides and plastics. The main contributors to the total quantity of waste generated by the estate include dyes and dye intermediates manufacture (82%), and the production of drugs and pharmaceuticals (13%).

Only 80 of the companies on site are know to send their effluents to the CETP. From the CETP, effluents are carried along a communal channel. Known as the "Effluent Channel Project", this runs for 55 kilometres before discharging into the Mahi River estuary close to the point where it runs into the Gulf of Khambhat.

TOXICOLOGICAL OUTLINES OF CHEMICALS IDENTIFIED IN GUJARAT

(Detailed outlines of these substances are available in the Appendices of the report)

Chlorobenzenes - Chlorobenzenes are a group of substances formed by the chlorination of benzene. They can also be formed unintentionally by various manufacturing processes or released into the environment as components of products such as industrial solvents and pesticides. In humans chlorobenzenes can effect the central nervous system and cause respiratory tract irritation. Animal experiments have recorded liver and kidney damage. They also accumulate in algae and fish. In total, there are twelve different chlorobenzenes. Hexachlorobenzene is the most persistent of the group and is included in the UNEP list of twelve persistent pollutants targeted for global phaseout.

Polychlorinated biphenyls (PCBs) - PCBs are extremely harmful to the environment since they persist and build up in the food chain over many years. They have been phased out in many countries and are likely soon to be banned globally under a new UNEP Convention. Their most common effects are on the reproductive system, the immune system and the development of the young.

Cadmium - Cadmium is highly toxic both to plants and animals. In humans, the kidney and bones are most affected. It can also cause cancer. It is easily taken up by plants and so can enter the food chain.

Copper - Long term elevated exposure to copper can be harmful. Inhalation of dust and vapours can irritate the nose, mouth and eyes and cause headaches, dizziness, nausea and diarrhoea. Extreme exposure can cause coma and death.

Chromium - Two forms of chromium (II & VI) have been shown to accumulate in many aquatic animals, especially shellfish. Large doses of chromium III may be harmful to humans, while exposure to chromium VI is associated with allergic skin reactions, kidney & liver damage. Chromium VI is classified as a known human carcinogen.

Lead - Lead is toxic to most living things. In humans it is associated with a wide range of adverse effects including nervous system disorders, anemia, heart disease, disorders in bones and reproduction. Of particular concern is the effect of relatively low exposure in cognitive and behavioural development in children.

Manganese - Manganese is an essential trace metal but it can be harmful in high doses. It affects the nervous system causing victims to become slow and clumsy and they may also suffer mental and emotional disturbances. Since it accumulates in the brain, any damage may be permanent.

Mercury - Mercury is an extremely toxic metal. It has no biochemical or nutritional value and is the only metal known to biomagnify i.e. progressively accumulate through the food chain. Mercury is toxic to kidneys and the central nervous system.

Nickel - Nickel is listed as a possible human carcinogen (Group 2B) by the International Agency for Research on Cancer. Nickel has also been associated with reproductive problems and birth defects.

SIGNIFICANT RESULTS INCLUDED

Sludge from final CETP setting lagoon (IT9054)

- 49 compounds were reliably identified organochlorine compounds: di-, tetra-, penta-, and hexachlorobenzene, benzenamines, chlorinated toluenes, chlorinated naphthalenes and hexachlorobutadiene.
- Significant levels of copper and zinc were found.

The report states: Heavy metal analysis results show that significant levels of copper, lead, mercury and zinc were found in the sludge collected from the CETP settling lagoon illustrates, once again, that the CETP is only capable of redistributing contaminants from the liquid to the solid sludge phase. While this may reduce the immediate loading to surface waters, it also creates an additional contaminated waste stream that must be addressed."

EFFLUENT FROM EFFLUENT CHANNEL BETWEEN CETP AND GULF OF KHAMBHAT (IT9053, IT9056)

- Water sample IT9053 was collected from the effluent channel approximately 1 kilometre downstream of the CETP. 14 compounds (33%) were reliably identified with alkylated benzenes being the major contributor. 1, 4-dichlorobenzene, Naphthalene and butylated hydroxytoluene (BHT) were also found in this sample.
- 20 compounds were reliably identified in sample (IT9056), 2-3 kilometres downstream of the Nandesari estate. These consisted of three isomers of dichlorobenzene, seven polycyclic aromatic hydrocarbons (PAHs), three alkylbenzenes, biphenyl, butylated hydroxytoluene and aliphatic hydrocarbons. Organic compounds found int his sample were similar to those found in the water sample IT9053 collected near to the CETP.

SLUDGE FROM HOLDING LAGOON CLOSETO GULF OF KHAMBHAT DISCHARGE (IT9055)

- Only 6 compounds (18%) could be identified with high degree of reliability. Once again di- and trichlorobenzenes and aliphatic hydrocarbons predominated.

KEY FINDINGS

In general, analysis of the samples collected from this area showed that most organochlorine compounds were retained int he setting lagoon of the CETP (sample IT9054). Nevertheless, chlorinated benzenes were still found along whole length of the channel and it appears that significant loadings of metals enter the channel downstream from the CETP. Water from the Channel is used for irrigation, even though it is clearly unsuitable for this purpose.

HOTSPOT # 3:-VAPI INDUSTRIAL ESTATE

The Vapi industrial estate is made up of nearly 2000 industrial units, that produce a wide range of chemicals, pharmaceuticals, dyes, plastics, pesticides and other agrochemicals. Dye manufacturers and dye intermediate units generate the largest quantity of hazardous waste. The situation regarding effluent treatment is same as in Ankleshwar and Nandesari.

The CETP has been completed and commissioned since the last study conducted by Greenpeace in 1996. Effluents from the CETP are discharged into the Damanganga River. However some wastes which are discharged into this river appear to bypass the CETP (see IT9059).

SIGNIFICANT RESULTS INCLUDE

Treated Effluent from CETP discharged to River (IT9058)

- This is heavily contaminated with organochlorine, compounds. 12 organic compounds were reliably identified. The classes of organochlorine compounds present included di-, tri- and tetra- chlorobenzenes and chlorinated benzenamines.
- It also contains high levels of cadmium (above European discharge limits) and detectable levels of chromium, copper, lead, manganese, mercury, nickel and zinc.

BLACK STREAM ADJACENT TO CETP (IT9059)

- The water from this stream was heavily contaminated with organochlorine compounds. 22 organic compounds were reliably identified, including di-, tri-, tetra-penta- and hexachlorobenzenes and chlorinated benzenamines. The sediment contained even more organic compounds. In addition to the compounds detected int he liquid sample (IT9059), the sediment contained chlorinated diazobenzenes and PCBs.
- Both the water and the sediment were heavily contaminated with the toxic heavy metals cadmium, chromium, copper, lead, mercury, nickel and zinc.

KEY FINDINGS

The range of organic compounds found int eh treated effluent from the CETP (IT9058) indicated that CETP is ineffective in removing a wide range of toxic, persistent and bioaccumulative compounds. The apparently untreated discharge also carries persistent pollutants directly into the river.

HOTSPOT # 4:- SARIGAM ESTATE

The town of Sarigam is situated approximately 15 kilometres south of Vapi. A separate industrial estate has been expanding int he area over recent years, and there have been reports by the local community of contamination of the ground water in the area. It has also reported that some industries int he area pump untreated wastewater into the ground via bore-holes. The introduction of a CETP to handle the treatment of combined wastewaters from industries in the area has been proposed.

One groundwater sample was taken int he vicinity of Sarigam. Upon analysis, this groundwater was found to contain trichloroethene, benzene, chlorobenzene, 1, 3- and 1, 4-dichlorobenzenes. The concentration of trichloroethene present exceeded the US EPA permissible levels set fro drinking water by a factor of four, Benzene is a known human carcinogen and dichlorobenzene is a persistent organic contaminant that is itself resistant to microbial Breakdown and is suspected to inhibit the microbial degradation of other chemicals.

CONCLUSION

This report highlights the complexity of the chemical mixtures that continue to be discharged to the environment in Gujarat. Many of these are persistent. It is apparent that the effluent treatment plants (CETPs) are unable to treat the wastes they receive and discharge toxic and persistent pollutants to the rivers and estuaries int he region. They also create toxic sludges which need disposal. The few samples of groundwater collected were also contaminated with industrial chemicals. To shop pollution, there is a clear need for an overall waste treatment strategy with the goal of elimination of priority pollutants at source.

" WHO BEARS THE COST "

CONCLUSIONS OF THE INDIAN PEOPLE'S TRIBUNAL (IPT)'S GUJARAT REPORT "WHO BEARS THE COST", FEBRUARY 1999

This kind of investigation by its very nature cannot be exhaustive and can only provide an overview. But even the brief interaction we had with the area and its people has led us to the conclusion that the 'Golden Corridor' of Gujarat is a seminal example of how industrialists, politicians and law enforcement agencies can rape an entire area, it's people, workers and environment towards purely profiteering ends.

The problems with the 'Golden Corridor' need to be viewed in the larger perspective of industrialisation in Gujarat and India as a whole. India's rapid economic, population and industrial growth are causing severe environmental degradation and pollution problems with local, regional and global impacts. Urbanisation with its concomitant expansion of vehicular transportation, industrialization, high intensity agriculture, and the growing demand for consumer goods, increases pressure for the extraction, procurement, and conversion of natural resources for energy. With economic growth, India has simultaneously witnessed a significant deterioration in the quality of its air, water and soil.

Air quality in India's major cities indicate that ambient levels of NoX, SO2, lead and suspended particulate matter are often higher than World Health Organization and India standards. Sulphur dioxide levels in nine of the country's major cities exceed national standards. Other harmful substances such as ozone are not monitored. Major contributors to air pollution problems in India include thermal power stations, industrial factories, vehicles, and the use of non-commercial fuels such as coal briquettes, animal dung and trash by large sections of the population. The negative environmental effects from increased fossil fuel use are likely to increase as India seeks to meet the energy demands of its expanding economy. Coal will play a predominant role in this expansion. The major pollutants from coal exploitation include the principal green house gases, particulate air emissions, coal mining runoff and wastes and coal ash solid wastes which pose a large-scale disposal problem.

Most of the rivers, streams, and large stretches of the coastal marine environment in India are highly polluted with municipal waste, waste generated from industry, chemical agents from fertilizers, pesticides from crop protection, and silt from degraded catchments. In the major cities, less than 50% of the total waste water generated is collected and less than one-fourth is treated. The consequence of such pollution is high levels of waterborne diseases which account for two-thirds of all illnesses in India with a significant loss in productivity. Although there is a Coastal Regulations Zone Notification designed to protect the coastal marine ecosystems, implementation is weak and marine pollution continues largely unabated.

Soil covering about 20% of the country are partially degraded from animal overgrazing, deforestation, improper irrigation practices, and poor land use patterns. In addition intensive agriculture and over-cultivation has resulted in nutrient-depleted soils. The amount of garbage generated in most India cities in increasing. Per-capita solid waste generation is estimated to be about 350 to 500 gsm. Only about 60% of this waste is collected and even then it is irregular and disposed off in ways which result in ground water and air pollution.

The situation in Gujarat is no better and if the Golden Corridor is treated as a model of industrialisation to be replicated countrywide, it is not only a frightening scenario but an ideal recipe for national disaster. In the introduction to this Report we have discussed the Gujarat situation but the following observation from an article published in the Down To Earth (June 1994) by Shankar V., Martin M. Bhatt and Erkman S., under the title "Who cares where its dumped?" Sums up the situation well:

"Industrial estates are proliferating in Gujarat, however waste disposal has not been a priority consideration for any of them. The Ahmedabad-Vadodara-Surat industrial belt has over 2000 units in the organized sector and more than 63,000 small-scale units manufacturing chemicals like soda ash, dyes, yarns and fertilizers. Besides, the state has two other major industrial estates, Ankleshwar and Vapi in the Baruch-Valsad belt.

"The Nandesari inustrial estate near Vadodara is a major production centre for highly toxic chemicals like H-acid and J-acid, which are not easily biodegradable. An inventory of waste at Nandesari, done in 1993 puts the daily generation of effluents containing solid waste at 120 tonnes about 70% of which is from industries manufacturing dyes and their intermediates.

"Vapi in Valsad district has around 1800 units of which about 450 fall in the category of polluting industries-50 paper mills, 60 dye intermediate producing units, 200 dye industries, 100 pharmaceutical factories, 25 textile dyeing units and about 10 pesticide plants.

Industries in all these areas usually dump their waste in low-lying areas within a 2-km radius. As a result, a major illegal dump yard has sprung up on the banks of the river Daman Ganga. The Vapi Industial Association has allowed its memebrs to dump waste on 0.6 km plot within the estate.

Apart from small and medium industries which has contributed largely to disorganized hazardous water disposal, large industries such as the Indian Petrochemicals Corp Ltd. (IPCL) at Vadodara also appear to have contributed to contamination of the ecosystem through indiscriminate disposal of hazardous waste.

IPCL, which generates waste in all of the 18 categories classified as hazardous by MOEF, dumps 1800 tonnes of soild waste every month at a site near Nandesari. The company's onsite waste disposal tract is a semi-open area behind a wall, where waste from its 14 chemical units is dumped as a matter of routine. The IPCL dumpsite is on a hill. Since there is no adequate scientific treatment of the waste, they are washed down into the river contaminating the waters with hazardous wastes.

Pollutants from IPcL include organic acid, hydrocarbons, sulfides, acrylo nitrite and propylene waste. The dumpsite often catches fire in the afternoons. Chemical analysis of the dumpsite leachate shows it contains toxic levels of phenol.

Another large industry Gujarat Alkalis and Chemicals Ltd. (GACL) dumps up to 1 tonne of mercury sludge, among other things, every day. The volume of mercury sludge is reported to have been much higher in the past.

As a result of all these above reported activities, land, groundwater and surface water bodies have been extensively contaminated in these industrial areas of Gujarat."

Needless to say, the workers in the chemical units are the worst casualties. They not only work in alarming conditions but also have to reside close to the industries since they are neither able to find accommodation away int he city nor have proper transport to reach their workplaces. What could best explain their condition is the fact that it took nearly 50 years of successive governments to include them under the Minimum Wages Act. The chemical industry came under the Act in May, 1997 and that, too, after a sustained struggle by the Unions inter alia through a Public Interest Litigation. Needless to say the wages are far lower than the rise in the cost of living.

In every place we visited, we encountered major pollution-related hazards. This is affecting the lives of people not just in one or another aspect, but in every aspect of their lives, namely, their air, soil and drinking water. Apart from this, it has been having a visible impact on the health of the residents. Workers of these companies are of course the worst affected.

Though we main looked at the Chemical industries whatever limited observations we made in respect of other industries make un conclude that the problem is all-pervasive. At most of the places there is no pollution control equipment and wherever efforts have been made to provide for control of pollution they have been half-hearted and ineffective.

Environmental management is a continuous process that consists of three interconnected steps:

a) the collection and analysis of relevant data; learning from the best worldwide practices and incorporating these in the planning, formulation and implementation of policy including the setting of standards;

b) programme implementation, monitoring results and active compliance enforcement; and

c) periodic verification through independent audition.

An assessment of India's environmental management system suggest that weaknesses are evident at each of these three main steps and at every administrative level i.e. centre, state and district (municipality and panchayat).

In brief, environmental management capacity has to be enhanced. This will require more effective professional and technical integration of environmental concerns into policy planning formulation and implementation; changes to, and or enhancing institutional structures to strengthen monitoring, cimpliance and enforcement of environmental laws and standards; decentralizing centre level command - and - control of environmental initiatives to the state, district and community both for local ownsership and local relevance, introducing more non-traditional approaches to environmental management including an increased role for community-based non governmental organizations and a recognition that training and upgrading of staff and officials who operate the environmental management institutions and agencies is a sound investment.

Law concerning environmental pollution is one of the fastest growing branches of law in India. Int he last thirty years a number of laws have been passed to check environmental degradation. Some of the more important laws are the following:

(i) Water Pollution Act, 1974;
(ii) Air Pollution Act, 1981;
(iii) Environment Protection Act, 1986;
(iv) Indian Forest Act, 1980;
(v) Notification concerning Coastal Zone Regulation,
(vi) Amendments to the Factories Act,
(vii) Hazardous Wastes (Management and Handling) Rules, 1989;
(viii) Public Liability Insurance Act, 1991

Legally, it is virtually impossible for any industry to start or expand without prior environmental clearance. Environmental Impact Assessment Report and Environmental Management Plans are an absolute precondition to start an industry and public hearings have become necessary for factory expansions. The law frowns upon any kind of pollution whether it is air, water or noise, it also controls dumping of hazardous wastes and does not permit ravage of coast lines or trimming the forest cover. On paper it looks as if we have won the battle against pollution.

May be the existing laws are not sufficient to deal with the drastic situation. But even if the existing laws are implemented in their letter and spirit, a large amount of problems can be alleviated. Besides, the Supreme Court has in recent years laid down four major principles which are to govern environmental law and even if these principles are implemented much improvement can be achieved.

(i) Precautionary principle;

(ii) Polluter pays principle;

(iii) Doctrine of public trust;

(iv) transmigrational equity principle.

Much of the environmental pollution is irreversible. By the time pollution is noticed and action taken, it would have already taken its till. Bhopal is a living example of this. It is internationally well accepted that emphasis has to be on prevention of pollution rather than wait for it to take place and then adopt fire fighting measures.

Another problem that arises in pollution matters is the question of proof. At times, though it is easy to see the effects of pollution it becomes very difficult to conclusively prove that these effects are a result of the activities of a specified industry. The problem becomes more acute when a number of similar industries are operating in the same locality, for example chemical industries. Under the normal law, the person making the allegation is required to prove the allegation. Thus, if the pollution control authorities or a citizens' organisation makes an allegation that a particular industry is the cause of environmental hazards it is for the authority or the group to substantiate such an allegation. This becomes a very difficult task for the citizens because access to data, scientific analysis, etc. is very difficult. At times, even of the authorities (even assuming they act honestly and diligently), this is a difficult task because of inadequate and partial access to the plant, outdated equipment, manipulation of records by the industry and regulated emission of pollutants during site visits by the officials of the authorities.

The Precautionary Principle requires that the Government and pollution control authorities take preventive measures for stopping pollution. According to the Supreme Court, this principle has three dimensions-

(a) Environmental measures - by the State Government and Statutory authorities-must anticipate, prevent and attack the causes of environmental degradation.

(b) Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

(c) The 'onus of proof' is on the actor/developer industrialist to show that his action is environmentally benign.

The consequence of this principle is that the State Government and pollution control authorities are required to play an active role in identifying potential pollution hazards and take preventive measures. Thus before any industry is allowed to set up its plant, the authorities are required to assess the likelihood of pollution hazards and not allow the industry to commence operations unless appropriate pollution control measures are adopted. In fact this is the principle behind the present requirement of submitting Environment Impact Assessment study and environment Management Plan before permitting new activities. What is however needed to be done on an urgent basis is an Area Impact Assessment Study- a specific study predicting not just the isolated impact of the proposed industry on the locality but a study which would take into account the existing polluting int he area and taking into account the additional and synergetic pollution load which the proposed industry would cause. In fact this flows logically from the precautionary principle, whose very core is not the individual industry but the impact on the locality.

Polluter Pays Principle lays down that the cost of pollution, whether on the environment or on people has to be paid by the polluter. The Polluter should be made to pay for the damage caused because of his activities. Thus, he should not only be made to install pollution control equipment but also pay for restoration of the environment and compensation to the victoms of his activities.

Public Trust Doctrine lays down that all common resources such as rivers, forests, mangroves, air, etc. are owned by the State not for itself but in trust for all the citizens in common. Every citizen has equal access and rights to these and they cannot be misused or trampled on by either the State or by private parties to the detriment of others. The State is obliged to protect these resources.

The Transgeneration Equity Principle provides that formulation and implementation of environmental laws has to be based not merely on how the present environment will be affected by a given activity but also how the future generations will be affected. Whether a particular industry should be permitted to be set up or expand or not will thus depend not just on whether the industry causes any present damage to the environment but also whether it is reasonably likely to cause any damage for the future generations.

Application of all these principle and laws can go a long way in ameliorating environmental problems but to a large extent this would depend on the diligence and honesty of the authorities. Unfortunately this is presently in short supply. One of the ways of getting round this problem would be for the Supreme Court to personally penalise by fines and imprisonment not just the industrialists but also the personnel of the pollution control authorities in all cases where the authorities have failed to implement this principle by design or by negligence.

But he reality is entirely different. In every big city we can actually small the pollution increasing, more and more complaints are coming of lands becoming infertile due to pollution. Villages with polluted drinking water are multiplying and forests are depleting at a faster rate than ever before. We should also not forget that the greatest industrial disaster in the world the Bhopal tragedy occurred during this 'pollution sensitised law' era and to compound the calamity hardly any of the affected persons have received any compensation. This tragic trend is likely to increase with India's efforts at wanton liberalisation and the increasing presence of multinationals who will use India as a dumping ground for hazardous waste and manufacturing ground for products banned in their parent countries.

Like with many other branches of laws, the environmental laws in India also suffer from the dualism of being progressive on paper and ineffective in practice.

A good example of the failure of environmental laws is the 'Golden Corridor'. The unbridled and uncontrolled expansion of industries in this area, in the midst of one of the most highly industrialised states in the country, in complete disregard of the legal provisions is clearly a shining example of the travesty of justice.

Fish are dying by the thousands, hardly any potable water exists in the area, people are increasingly failing sick because of the pollution and the whole area is soon likely to become unlivable. This, in the midst of a legal regime which the Government prides in proclaiming to be one of the most progressive in the world.

The width and depth of the pollution and the repetition of the same story all over India leads us to conclude that the industrialists are least bothered about the pollution, and the Pollution Control Boards, the Factory Inspectorate and the Government are acting hand in glove with the polluters.

The hazards of groundwater pollution are as serious and sometimes more serious then surface pollution. This is because people dependent on wells, borewells or hand pumps have neither the information nor the means to est such water nor do they have any other alternative.

A description of the conditions of contract labourers in their work places is also a catalogue of exploitation. An increasing number of large companies (including multinational companies) are taking labourers from labour contractors who are denied even minimum dignity in their working conditions.

The attitude of the employers and the Government authorities to this Tribunal also needs deprecation. All the concerned parties were served in advance, they were invited to hearings not only at the site but also at the common public hearing at Vadodara. However, only a select few employers and officials appeared before us. Their attitude also leaves much to be desired. If this is their response to a Tribunal consisting of multidisciplinary experts, one can well imagine the way they treat the woes of local population and workers.

FURTHER RECOMMENDATIONS

Each chapter of this Report ends with specific recommendations concerning the problem at issue. We believe that these recommendations should be implemented in full throughout the 'Golden Corridor'. Apart from those recommendations we believe that the following additional measures should be taken by the authorities:

1. Using environmental audits, independent experts and baseline and current state studies, liability of industry should be established and proper evaluation should be done of the extent of damage to the environment. This should form the basis for an interim compensation to the affected population. Such compensation should be for the short term as well as for the long term. The environment also has to be compensated to offset the impact on it to the maximum extent feasible. Responsibility for his should be placed squarely on the industry and no subsidy-direct or indirect - should be given by the government.

2. Toxic release Inventory is a concept under implementation in various western countries where they have more experience of regulating hazardous substances manufacture. Toxic Release Inventory (TRI) is a database of information about releases and transfers of toxic chemicals from manufacturing facilities (factories/industries). Facilities must report their releases of a toxic chemical to TRI if they fulfil certain criteria. Not all pollution is reported under TRI as its exists in the USA. However it can be appropriately adapted for India and be made more comprehensive and exhaustive say like a National Pollutant Release Inventory. One of the more important aspects is that is should be widely, publicly available and mandatory on behalf of the factory.

3. There is a proposal to design and implement Toxic Release Inventory databases in India, the current status of which is not yet known. However the database should be widely available and exhaustive. Those who do not report toxic releases under this should be appropriately fined or punitive measures taken against them to prevent such practices. In the USA, those (facilities) who fail to report as required are subject to civil penalties of up to (US) $ 25,000 a day. There is no reason why such action cannot be taken in India.

4. Most of the industries in the Golden Corridor have been set up through the provision of major tax concessions and soft loans. Such concessions should be withdrawn for any company that is found to be polluting.

5. No company that is found to be polluting should be allowed to set up any other plant in any other part of Gujarat, and preferably in no other part of the country, unless its polluting practices are stopped.

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Telfax : + 91-11-431-0651
Email : nimi@vis1.unv.ernet.in

To : The Chairman
Gujarat Pollution Control Board
Gandhinagar
Gujarat

31 October, 2000

Cc : Chairman, Central Pollution Control Board, New Delhi

General Manager, Vapi Waste & Effluent Management Co. Ltd.

Shri. Devjibhai Tandel, ex-MP (Daman)

Shri. Rohitbhai Prajapati, Paryavaran Suraksha Samiti, Vadodara

Zonal Officer, Gujarat Pollution Control Board, Vapi

District Magistrate, Valsad

Prof. MGK Menon, High Power Committee of the Supreme Court.

Sir :

Subject : Right to Information as a first step towards cleaning pollution

On 19 October, 2000, village leaders from the fishing villages West of the Vapi Industrial Estate alongwith Greenpeace met Mr. A.A. Dolti, Zonal Officer, GPCB-Vapi, at the Vapi CETP. (Details of our meeting are enclosed in a separate letter).

We were assured by Mr. A.A. Dolti that we would be able to access the information regarding the nature of emissions from factories, including the Vapi CETP, in the Vapi Industrial Estate, through the GPCB head office in Gandhinagar.

We hope to be able to meet you in Gandhinagar on November 6, alongwith village leaders from Valsad and Daman to discuss with you means by which citizens and citizens' groups can help check the menace of industrial polllution.

In the meantime, we would be grateful if you could make available the following information to us when we visit as per the assurance made by your officer Mr. Dolti.

1. Results of analyses for
   a) heavy metals
   b) persistent organics, including organochlorines, PAHs
   c) COD, BOD, pH analyses

on "treated" effluent (wastewater) discharged from Vapi, Ankleshwar and Nandesari CETPs.

2. Results of analyses for
   a) heavy metals
   b) persistent organics, including organochlorines, PAHs

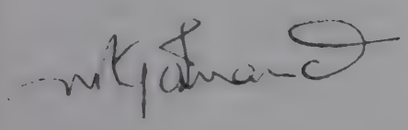
in sludge from the settlement ponds of the CETPs.

We understand you monitor the CETPs on a weekly basis. We would greatly appreciate it if you could provide us this information for a period of three most recent months. In case certain parameters are not being monitored, we would be happy if you could let us know which ones these are, and if there are plans to begin monitoring for these.

In the enclosed package, you will find a copy of our most recent analyses of effluent and sediment (E1 and S1) samples taken from the treated effluent outfall at Vapi CETP. You will also find our analyses from 1999.

Trust you will find the time to meet us.

Sincerely,



Nityanand Jayaraman
Greenpeace
PO Box 3166, Lodi Road
New Delhi 110 003
Telfax : 011 4310651
Email : nityanand.jayaraman@dialb.greenpeace.org

TEST CERTIFICATE

GEO-CHEM
LABORATORIES (P) LTD.

36/37, Rajle Industrial Estate
Purushottam Kheraj Marg
Mahim (W), Mumbai - 400 080.
Tel. : 664 20 21, 664 20 22, 665 08 11, 667 64 05
Fax : 667 03 25
E-Mail : geochemmld@mantraonline.com

PROFORMA NO. GCLPL/QF/12/00

Regd. Office : Geo-Chem House,
294, Shahid Bhagat Singh Road,
Fort, Mumbai - 400 001
Tel. : 266 77 00, 269 31 63, 260 78 17 Fax : 260 05 40
Telex : 11-83498 GEOC IN
E-Mail : geochem@mantraonline.com
Cable : GEOCHEMSUP

CERTIFICATE NO. 2/83212 AND 2/83213 Date : 17.10.2000 Page 1 of 1

Party's Name & Address : M/s. Greenpeace International
Lodi Road Post Office
New Delhi

Sample Not Drawn By
GEO-CHEM LABS.

Reference No. & Date : Fax Message dated 05.10.2000

Sample Described as : WASTE WATER

Date of Receipt of the Sample : 10.10.2000

Seal : -

Lab No.		2/83212	2/83213
Your Mark		E-1	E-2
	APHA METHOD REF.		
pH	4500 H+b	7.38	7.49
Colour	2120 B	540 unit	540 unit
D O	4500 O-C	Nil	Nil
C O D	5220 B	1120 ppm	960 ppm
B O D	5120 B	5.33 ppm	3.33 ppm
Cadmium	3500 Cd	Nil	Nil
Chromium	3500 Cr	170.3 ppb	168.8 ppb
Copper	3500 Cu	58.8 ppb	123.4 ppb
Lead	3500 Pb	Nil	Nil
Mercury	3500 Hg	Nil	Nil

* * *

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(FRANK PIMENTA)
CHIEF CHEMIST/QAM

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Fax : 567 03 26
E-Mail : geochemmld@mantraonline.com

Regd. Office : Geo-Chem House,
294, Shahid Bhagat Singh Road,
Fort, Mumbai - 400 001.
Tel. : 269 77 08, 269 91 53, 269 78 17 Fax : 269 55 45
Telex : 11-81408 GEOC IN
E-Mail : geochem@mantraonline.com
Cable : GEOCHEMSUP

PROFORMA NO. GCLPL/OF/12/08

CERTIFICATE NO. 2/83214 & 2/83215 Date : 16.10.2000 Page 1 of 1

Party's Name & Address : GREENPEACE INTERNATIONAL
LODI ROAD POST OFFICE,
NEW DELHI.

Sample Not Drawn By
GEO-CHEM LABS.

Reference No. & Date : FAX DATED 05.10.2000

Sample submitted as : SEDIMENT

Date of Receipt of the Sample : 10.10.2000

Qual : -

	Lab No. :	2/83214	2/83215
	Id. Mark :	S1	S2
CADMIUM (Cd)	:	2.63 ppm	7.45 ppm
CHROMIUM (Cr)	:	61.47 ppm	199.20 ppm
COPPER (Cu)	:	127.48 ppm	230.22 ppm
LEAD (Pb)	:	34.06 ppm	106.04 ppm
MERCURY (Hg)	:	1.13 ppm	9.18 ppm

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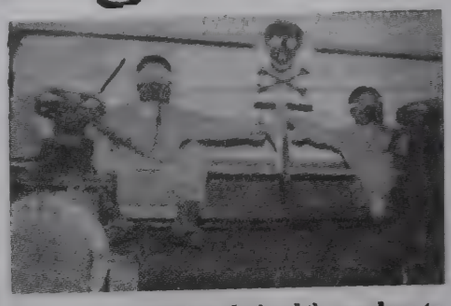
Greenpeace blocks valves of 'polluting' effluent plant

SANTOSH VIJAYKUMAR
VAPI, OCT 19

IN a daring move, Greenpeace activists today locked the valves of the Common Effluent Treatment Plant (CETP) at the Vapi Gujarat Industrial Development Corporation, protesting that the plant was allowing polluted water to flow into the nearby Damanganga river. The valves are normally used to allow the treated waste water from the nearby industries to flow into the Damanganga.



Greenpeace activists chained themselves to controlling valve of Vapi plant. *Express photo*

The action was taken after numerous rounds of negotiations with concerned authorities proved to be futile. Since Thursday morning itself, a group of nearly 200 farmers, fisherfolk and Greenpeace activists had gathered near the CETP to voice their protest. The agitated activists say the polluted water from the CETP was destroying the marine life in the river, thus depriving the fishermen of their only means of livelihood. They also pointed out that a large number of villagers had been stricken with several illnesses including immune system disorders, reproductive disorders and various types of cancer, leading to many deaths, which they attributed to the polluted water. The CETP was set up in 1997 to operate as a common plant to collect all the waste water and other effluents, treat them through various processes, and then let them out into river.

Greenpeace's Asia Toxic campaigner Nityanand Jayaraman, who was supported by representatives from farmer and fisherfolk unions, had led the first round of negotiations. Their main demand was that the CETP conduct periodic tests of the poisonous chemicals that were entering the plant and make the results available to the public. They wanted a written undertaking of the same. But CETP's chief executive officer, Sangappa Uppaladinni, rejected this demand. He was ready to give only a verbal assurance to the villagers. This prompted the activists to threaten a closure of the valves. However, the CEO did not budge. Vapi Industries Association and State Pollution Control Board's participation in the talks also proved fruitless. "As per our threats, we closed the valves, locked them and threw their keys somewhere on our way to the Vapi station," Jayaraman said.

Greenpeace up in arms against CETP

The Times of India News Service
VALSAD: Even as the district administration was busy organising festivities on Thursday to celebrate the Supreme Court verdict on the Sardar Sarovar Project, environmentalists of Greenpeace International held a demonstration at the common effluent treatment plant (CETP) in the industrial estate of Vapi against the discharge of waste into the nearby Daman Ganga river.

Activists gathered at the CETP in the morning and met Vapi Industries Association (VIA) president Mukesh Nagarsheth in the absence of a senior Gujarat Pollution Control Board official, who was reportedly attending a meeting in Valsad.

The activists, who held the demonstration till the evening, demanded a detailed effluent discharge content report from Nagarsheth. VIA sources told *TOI* that their president had expressed his inability to issue any such report and advised the activists to contact "the competent authorities".

Activists of the global environment organisation had visited the CETP at the GIDC in Vapi last year and exposed several irregularities by the authorities in treating and discharging industrial effluents into the nearby Daman Ganga river.

They submitted a detailed report on the findings to the government.

They had listed Vapi as a "dangerous environment hot-spot" along with the industrial estates of Nandesari, Sarigam and Ankleshwar in the state.

On the inferences drawn from tests of samples of the Daman Ganga water, the Greenpeace activists concluded that the treated effluents from the CETP that was discharged into the river contained heavily contaminated organochlorine compounds.

Twelve organic compounds were identified, including di, tri and tetra chloro benzenes and chlorinated benzenes. The discharge also contained high levels of carcinogenic compounds such as cadmium, chromium, copper, lead, manganese, mercury, nickel and zinc.

Their key findings then suggested that the much-published CETP was ineffective in removing a wide range of toxins and carcinogenic compounds harmful for the health and hygiene of both marine and human life.

Following a prolonged wait and alleged non-cooperation by the GPCB officials, the activists submitted their demands for investigating the effluents discharged, the VIA sources said.

Transparency in an opaque set-up

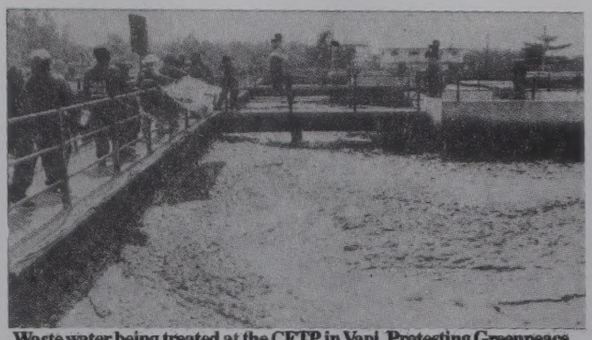
SANTOSH VIJAYKUMAR
VAPI, OCT 21 -

POISONOUS chemicals accompany the discharge of polluted water flowing ironically, from the fount of a 'pollution treatment plant' at Vapi. But if it is cause for worry for the company that runs the Comman Effluent Treatment Plant (CETP), into which a whopping 640 industries down their effluents, one cannot see it. Nor can one hear about it. Not even when hundreds of people, including Greenpeace activists and local farmers and fisherfolk rally before the CETP and in the end close down the valves that discharge the effluents into the river. Chemicals which cause mass deaths of fishes that not only leads to a havoc in the marine ecology, but is also eating into the livelihood of fisherfolk. Where cancer and reproductive disorders of ..have become as common as cold.

Yet, the round of talks between Asia Toxic Campaigner for Greenpeace, Nithyanand Jayaraman (NJ), farmers representative on one side and CEO Sangappa Uppalidinni (SU) of the Vapi Waste and Effluent Management Company Ltd that controls it, is an art in non-speak, non-commitment. It runs along these lines: **NJ:** Sir, after seeing the results of the tests done by us, do you agree that the effluent discharge contains poisonous elements? **SU:** (nods slowly, silent). **NJ:** Have you been monitoring the waste that flows into your plant for heavy metals and chlorinated poisons? **SU:** No, but we are 'trying' to monitor and taking 'necessary' steps.

NJ: Then can you publish the results of your analysis and give it to us? **SU:** OK, we will think about it. **NJ:** No sir, we want a promise, a written promise from you. We have already been promised twice and nothing has happened. **SU:** No, this time I'll promise you. We will surely take action. **NJ:** Ok, then we would like you to give us a written undertaking.

SU: No, no. I am giving you a verbal promise. I can't give you anything in writing. **NJ:** When you can give an oral promise, why can't you put it in writing? It should be given to any member of the public who demands it. **SU:** No, no, we just can't give anything in writing.



Waste water being treated at the CETP in Vapi. Protesting Greenpeace activists proceed to close the valves and shut the plant– *Photo by Santosh Vijaykumar*

We can give you the results, but not the public. As they wait for the arrival of representatives from the Gujarat Pollution Control Board (GPCB), *Indian Express* speaks to the CEO: **IE:** Who is the CETP accountable to? **SU:** Uhh, I think it is the industries.

We are accountable to the industries. **IE:** But how can you be accountable to the industries when the waste flows into the CETP from them? **SU:** Oh, OK. Then, I think we are accountable to the GPCB. Yes, it is GPCB only.

On the arrival of the GPCB representatives, a series of presentations were made by Greenpeace activists. After a long time, a member of the GPCB has a solution, a brilliant mantra for new-age management, rather. He says, "OK, I have an idea. You write your problem on a piece of paper, explain and give it to us. We will pass it on to the higher authorities." **NJ** is visibly enraged, and is in a loss for words.

As the minutes progress, **IE** speaks to the deputy engineer of the GPCB, M V Patel. **IE:** Why has the waste flowing in from the industries not been monitored? **GPCB:** You see, this is one of the best CETP plants and we are proud of this. See the greenery around? **IE:** Sorry. Our question was why has the waste flowing in from the industries not been monitored? **GPCB:** See, this is a very technical question. You have to ask our Regional Officer. I am only an engineer, how can I answer technical questions?

IE: (to the president of the Vapi Industries Association, Mukesh Nagarseth): Why have the poisonous effluents been flowing into the Damanganga River? **VIA:** I don't know what is poisonous or non-poisonous. The Vapi Waste Management will deal with it. I can't tell you anything more.

With only a few officers of the GIDC even aware that a CETP exists hardly 500 feet away, it is no surprise that the main demands of the activists here are accountability and transparency: make a periodical Toxic Release Inventory to analyse the various effluents and make the results available to the public.

Pollution policy need of the hour: Expert

By Anil Pathak

AHMEDABAD: In view of increasing water and air pollution in big cities, the state government should, at the earliest, evolve a clear-cut transparent policy for strict implementation of pollution control measures in golden corridors stretching from Vapi to Vatva in Ahmedabad, feels R Parthasarathy, a retired IAS official and leading environment expert.

Speaking to The Times of India, Parthasarathy observed that "environmental pollution control cannot be achieved by legislation alone and, therefore, people as well as industries would have to play their role in making concerted efforts in this direction."

Giving a warning over the menace of water and air pollution, he says "We must act before it is too late. Already there is feeling in some quarters that we are bolting the stable after the horse has gone but it is better late than never."

Though nine common effluent treatment plants have been set up to check pollution in big chemical estates of the GIDC, the government, in collaboration with industries, should take hard decisions in larger interests of people living in big cities where there is steady growth of dyestuff units. The CETPs have been set up at Vapi, Ankleshwar, Sarigam, Sachin, Nandesari, Panoli, Naroda, Odhav and Vatva.

When his attention was drawn to a massive demonstration staged by volunteers of Greenpeace International at Vapi protesting against release of effluence in the nearby river, he said joint efforts should be made to educate people and industries on avoiding agitations on environment issues.

More than 5,000 industrial units have installed their own effluent treatment plants. Four more CETPs are in the pipeline for other major industrial estates. Still thousands of units do not have such facilities. For disposal of hazardous wastes, 18 locations have been identified. CETPs will be set up at Pandesara, Jhagadia and Dahej. The Gujarat Pollution Control Board has launched projects for monitoring the quality of surface and ground water of rivers like Narmada, Tapti, Mahi and Sabarmati.

The board is also monitoring waste water discharges into Sabarmati, Meshwo, Bans, Mahi, Panam, Daman Ganga, Tapti and Ambiva rivers under schemes like global environmental monitoring and Indian national aquatic resource system projects.

Visit our Website : www.greenpeaceindia.org